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TYPE I PROGRESS REPORT  
January 9, 1973

Title: Mineral Exploration Potential of ERTS-1 Data,  
P-208, Contract No. NAS5-21745, GSFC#297

Principal  
Investigator: Dr. William A. Brewer

Objective

Photographic interpretation of ERTS-1 imagery of a test site in Arizona with emphasis on porphyry copper deposits occurring at the intersection of major fault systems and igneous intrusions. A regional tectonic interpretation is superior from the vantage point of an orbital satellite. The ERTS interpretation is to be compared to that done by classical techniques.

Summary of Accomplishments

The work performed during the period since the last Type I Progress Report is as follows:

(a) Location on a transparency overlay to an ERTS photo mosaic (scale 1:1,000,000) the location and names of the known porphyry copper mines along with the major tectonic faults that are observed on the ERTS imagery.

(b) Photographic placement of the following maps on transparency overlays (scale 1:1,000,000) that will be used in the interpretation of the ERTS imagery:

1. Map of outcrops of Tertiary and Quaternary igneous rocks in Arizona
2. Map of outcrops of Laramide rocks in Arizona
3. Map of outcrops of Paleozoic and Mesozoic rocks in Arizona
4. Map of outcrops of Precambrian rocks in Arizona

(E73-10018) MINERAL EXPLORATION POTENTIAL  
OF ERTS-1 DATA Progress Report (Earth  
Satellite Corp., Berkeley, Calif.) 3 p  
HC \$3.00

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(c) Plot on transparency overlays by stereoscope (X2 power) the side-lap geologic structure. The 3-D perspective enabled the detection of small faults and direction of dip on some bedding planes.

(d) Ordering through the User's Data Center (Greenbelt) those additional frames that would give us more complete coverage of a test site with less cloud cover. Also ordered color composite positive transparencies of the test site.

(e) Received aircraft underflight coverage over the test site. This is from the RC-10 camera and are 9" x 9" transparencies of both infrared color and color photography. Preliminary flight line locations and interpretation has commenced.

(f) A preliminary interpretation of SLAR imagery collected in the northern portion of the test site (Phoenix area) was performed. This imagery is from the Air Force Systems Command aircraft.

#### Problems

We have not received the color composite transparencies we ordered back in the beginning of November. This delay has not held us up from our conformance to the work schedule and hopefully will arrive along with other frames, Channels 5 and 7, soon. The work has progressed well in the last two-month period with formation of thoughts that need more proving by interpretation before reporting on.

#### Publications

None

#### Recommendations

None

Standing Order

No changes

Image Descriptor Form

None

Data Request Forms

None

Schedule

No changes

Funding and Personnel

No changes

Plans for Next Reporting Period

Continuing analysis of ERTS-1 imagery and aircraft underflight photos with correlation to SLAR and ERTS color composites when they arrive. From the analysis of two months of ERTS imagery we feel the objectives set forth in our proposal can be met except for the modification of a few minor points. The submittal of the Data Analysis Plan will be performed in the next 15 days.